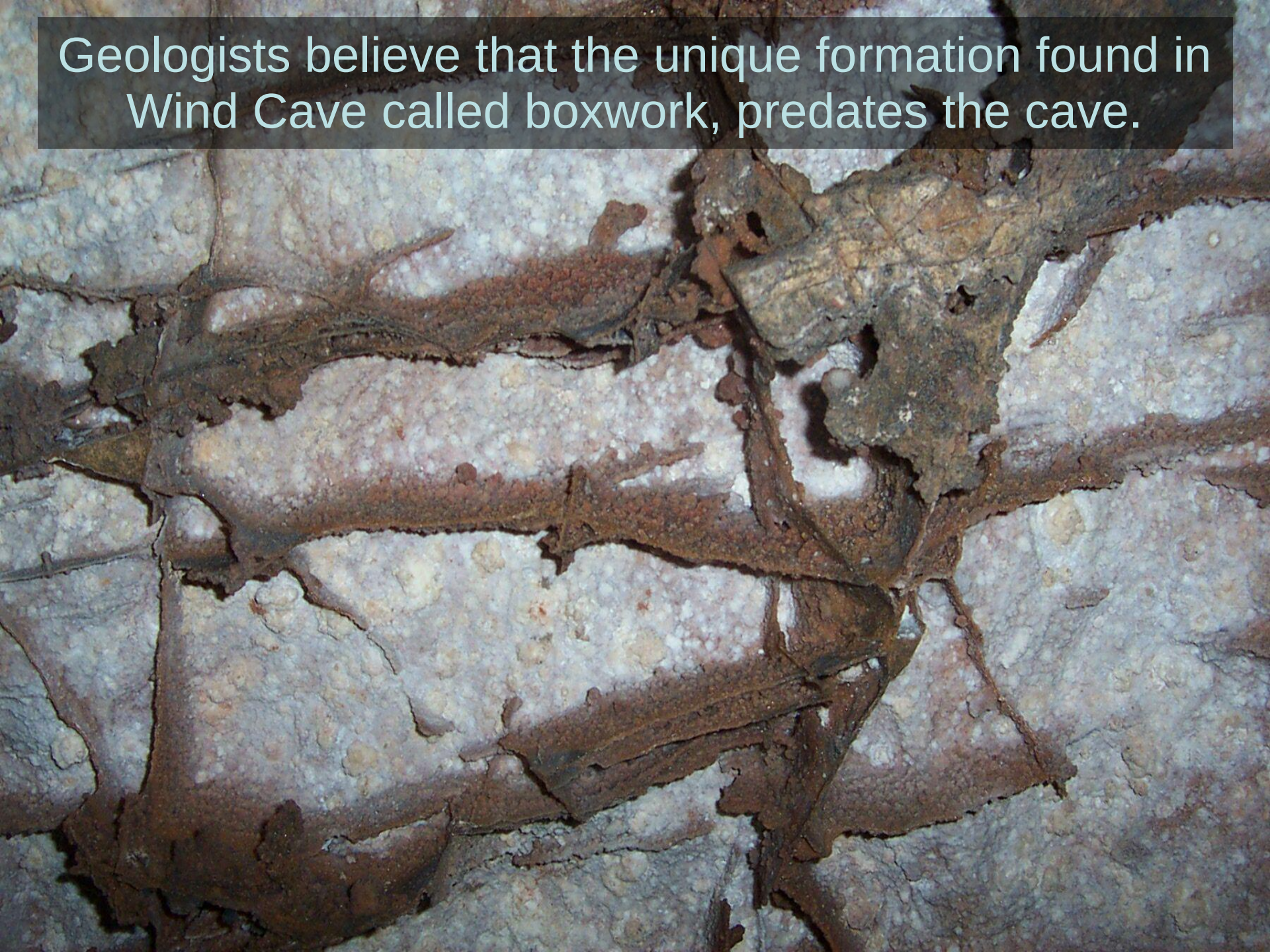
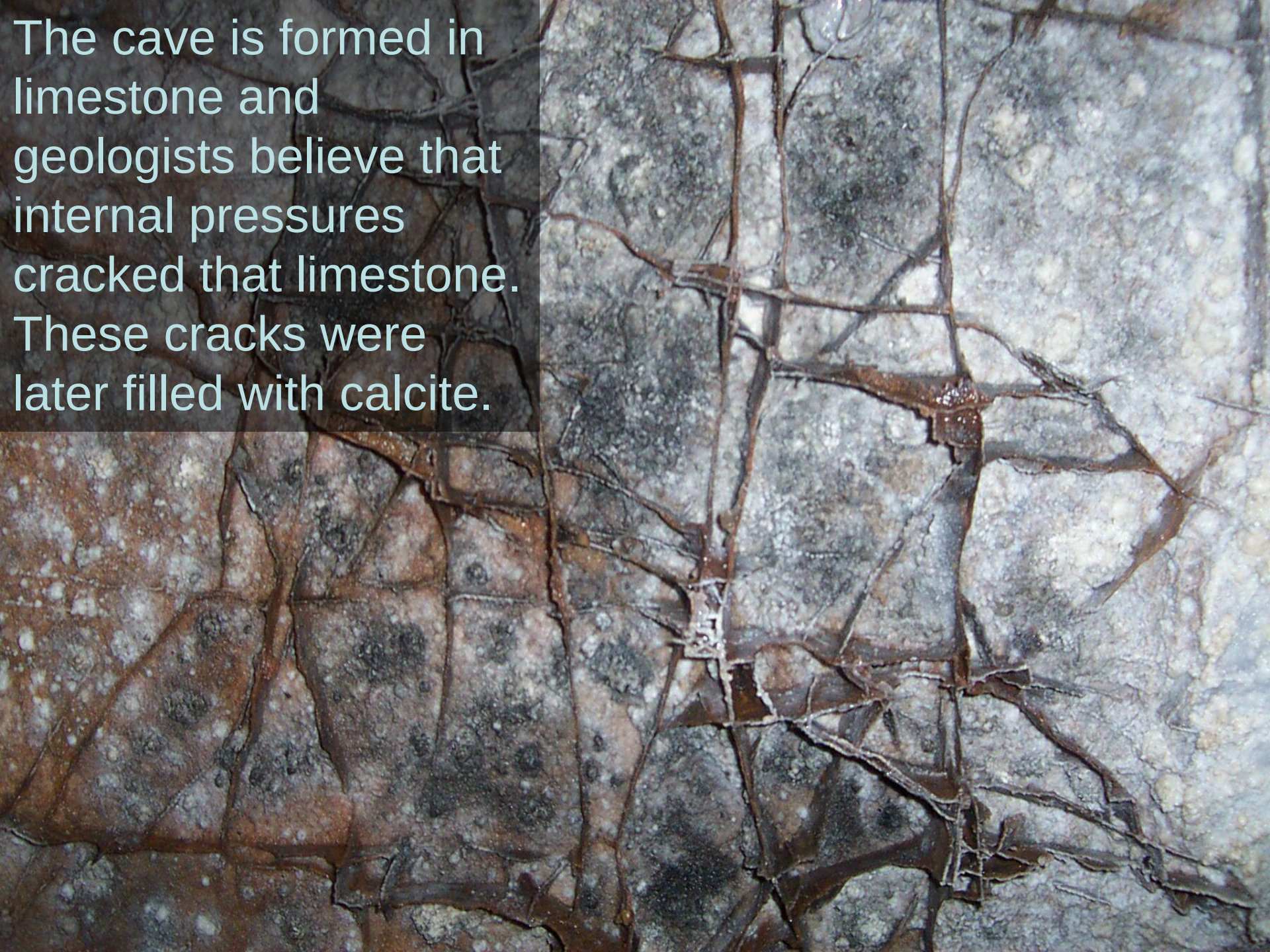
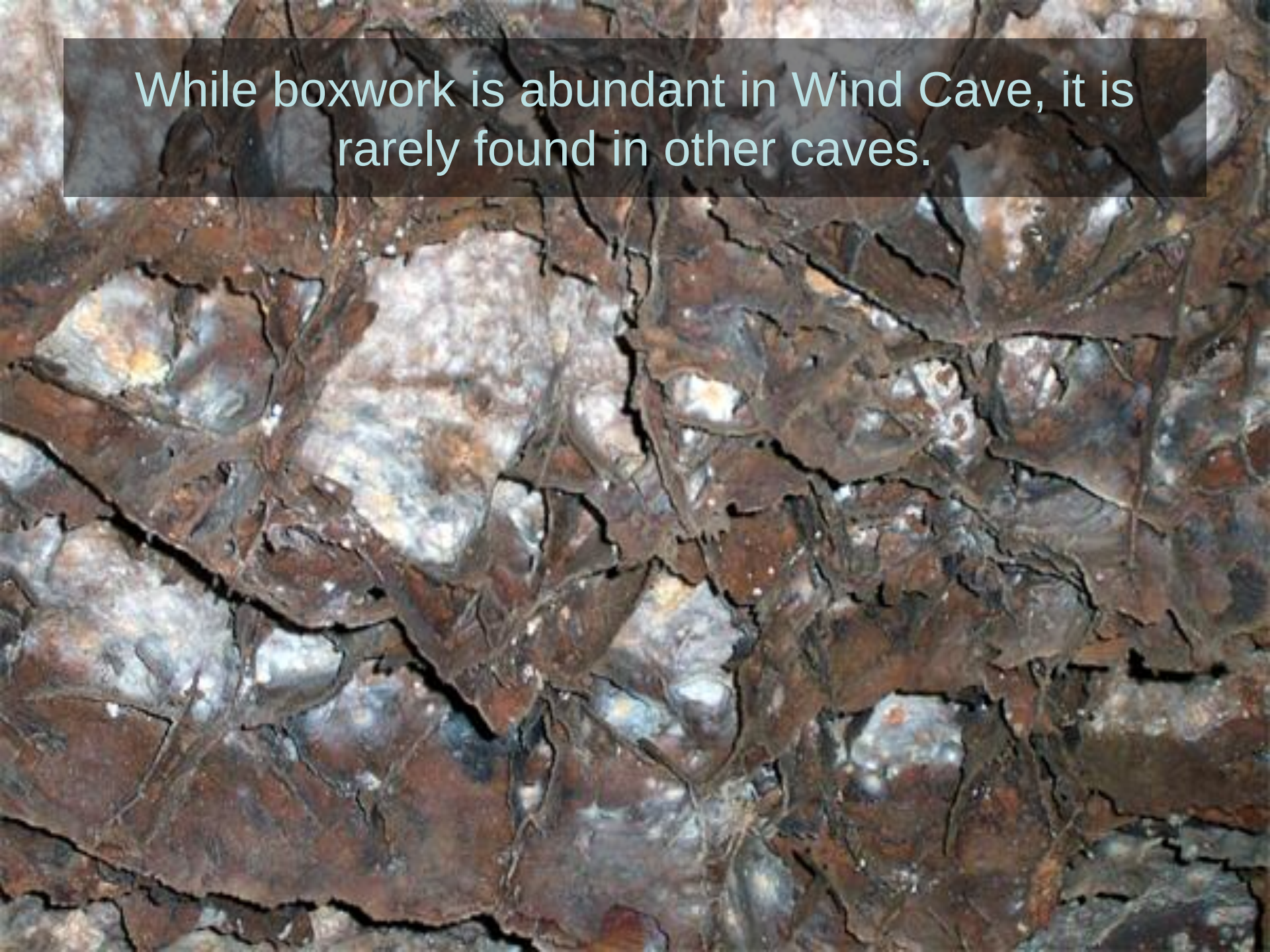

Wind Cave
Formations

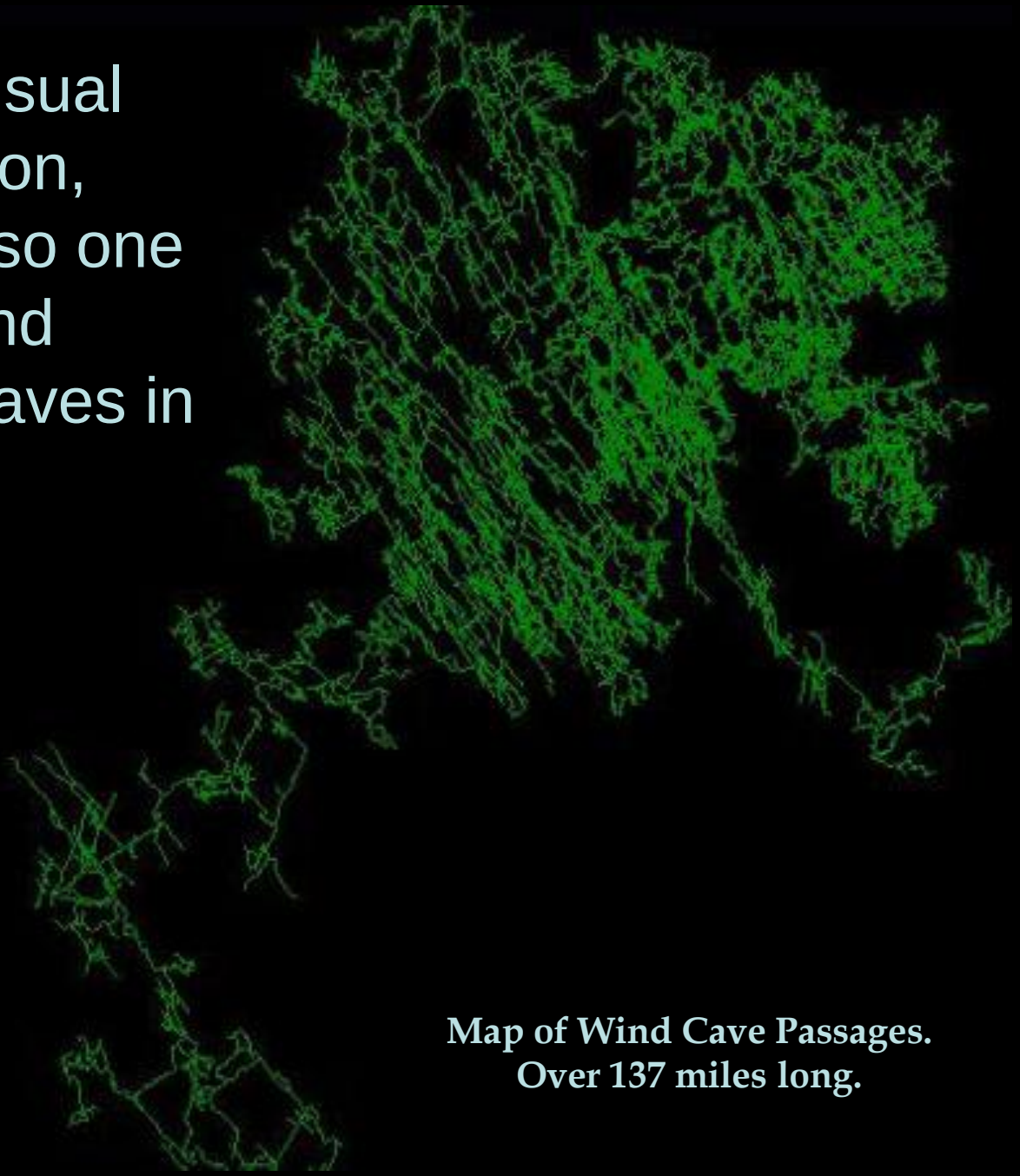

Geologists believe that the unique formation found in Wind Cave called boxwork, predates the cave.


The cave is formed in limestone and geologists believe that internal pressures cracked that limestone. These cracks were later filled with calcite.

Over time, the boxwork was exposed as the surrounding limestone weathered away.


While boxwork is abundant in Wind Cave, it is rarely found in other caves.

Besides the unusual boxwork formation, Wind Cave is also one of the longest and most complex caves in the world!



**Map of Wind Cave Passages.**
**Over 137 miles long.**

Over the years, Wind Cave has undergone many geological changes; however, water continues to seep into the cave. As it does, this water leaves behind formations such as popcorn and frostwork.

These speleothems, or cave formations are created when water traveling from the surface picks up carbon dioxide from the soil and plants.

Water mixed with carbon dioxide creates carbonic acid.  That acid can dissolve limestone.  But more importantly, carry the dissolved material with it.

When that water enters the cave, the carbon dioxide degasses, leaving small particles behind to build up.

If the water is dripping it will create a stalactite.

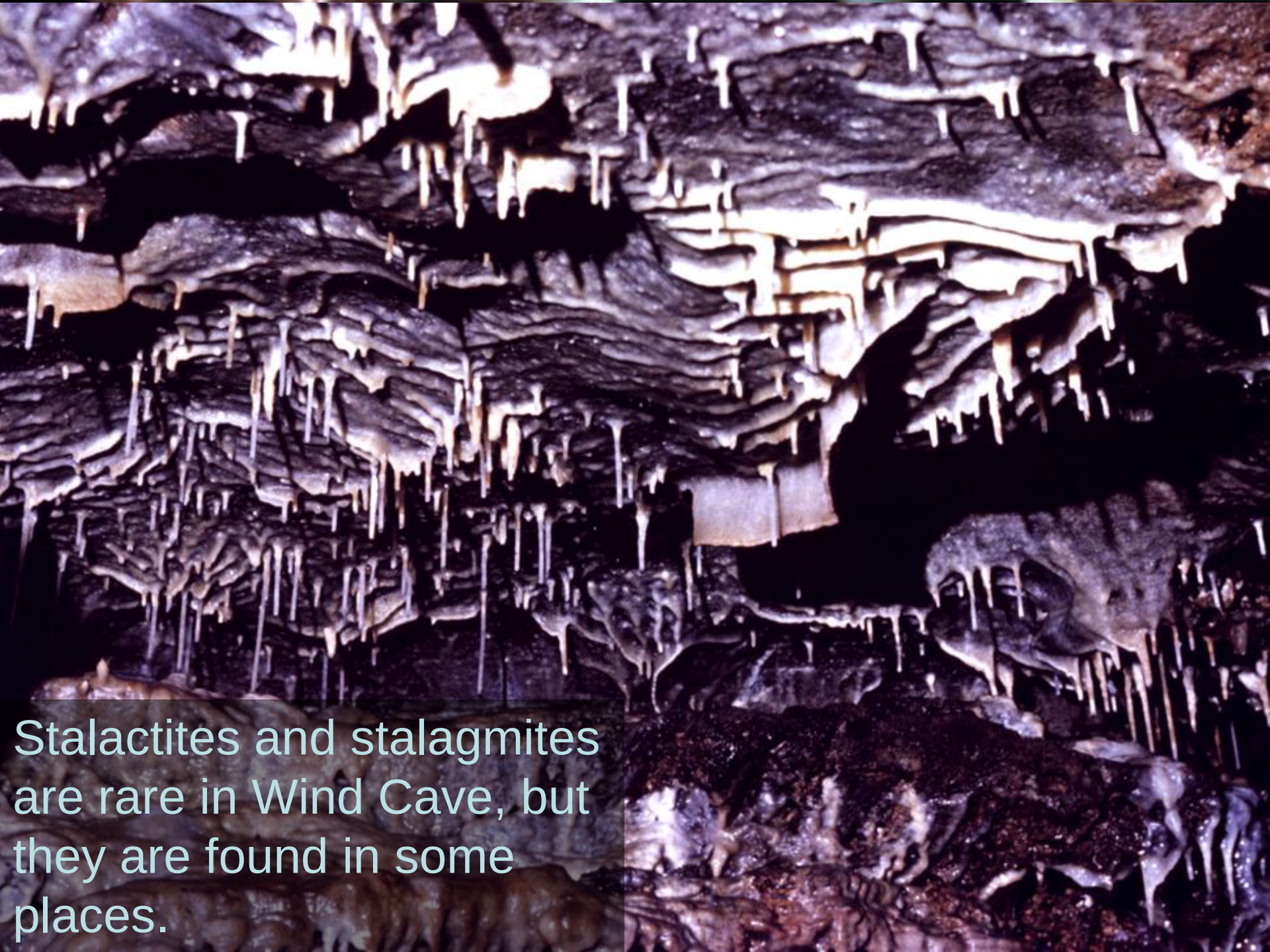
If it doesn’t loose the carbon dioxide until it hits the ground, it creates a stalagmite.

If a stalactite and a stalagmite meet, they create a column.

Additionally this dripping water can create flowstone, which forms in thin layers over time. Flowstone masses are often fluted with draperies at their lower end.

Water seeping from the wall of the cave creates popcorn…

…or another interesting feature, called frostwork.



Stalactites and stalagmites are rare in Wind Cave, but they are found in some places.

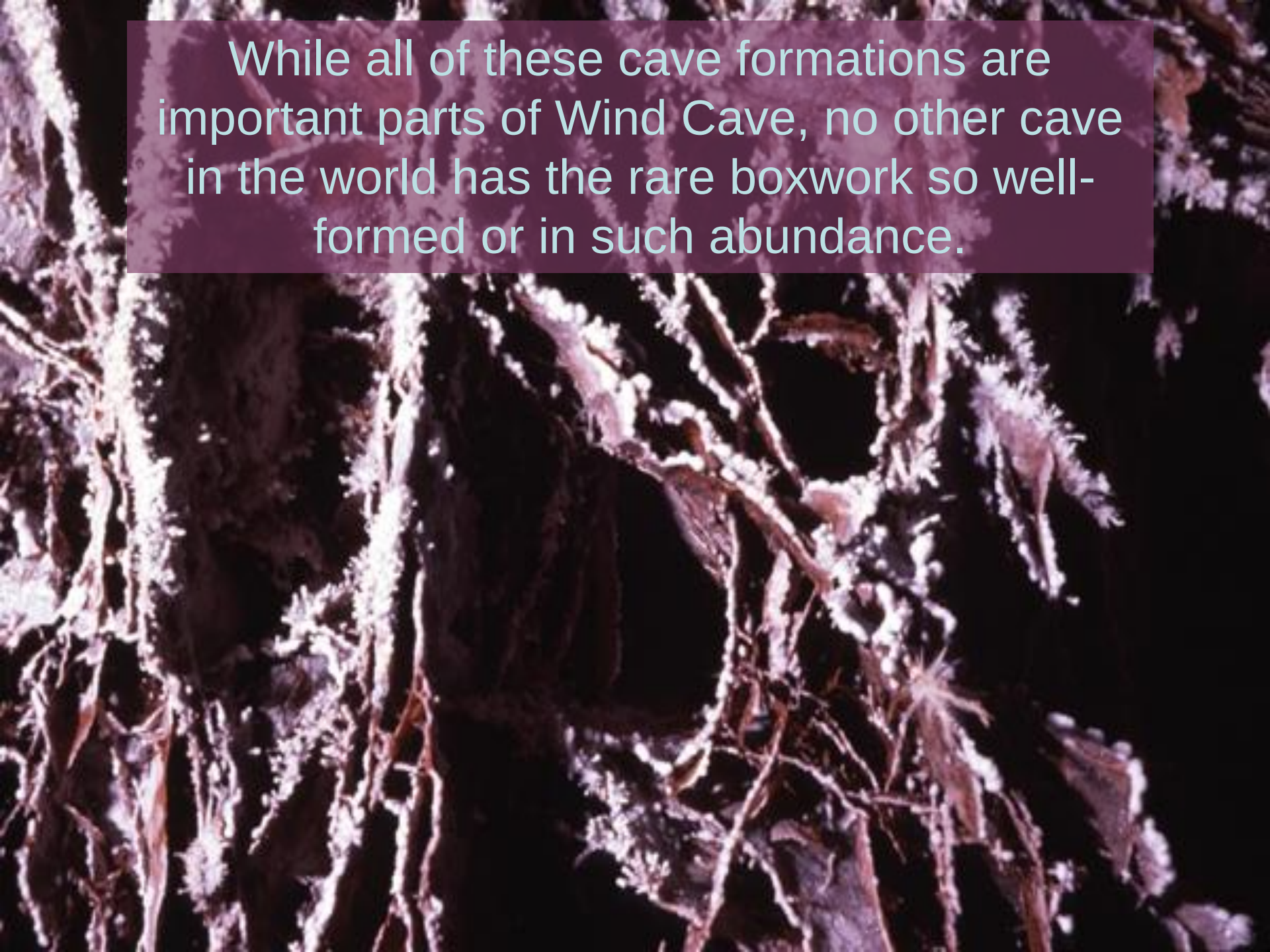
Spear-shaped crystals of calcite called dog tooth spar frequently line small pockets in the limestone rock.

One of the most curious formations in Wind Cave are helictite bushes, which usually grow from the floor. Some think these bushes may be formed through tiny holes inside the “branches”, others speculate that they may have formed under water.

Calcite rafts appear as thin sheets of calcite on the surface of Calcite Lake in the deepest part of the cave. The thin rafts float on the surface due to surface tension before eventually sinking when they become too heavy or when the pool is disturbed.

Calcite rafts which litter the floor of some dry passages of the cave are evidence that these passages were once flooded too.

Gypsum, a mineral containing both calcium and sulfur, sometimes takes the form of needle-like crystals that radiate from clusters on the floor of the cave .



While all of these cave formations are important parts of Wind Cave, no other cave in the world has the rare boxwork so well-formed or in such abundance.